Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claims 9-24 without prejudice.

1. (original) A prefix search key apparatus for storing a prefix key of a preassigned length comprising:

a plurality of memory banks, the number of memory banks determined by at least the number of ordinates within an n-dimension representation, the n-dimension representation defining a coordinate system, each bank associated with one of the ordinates within the n-dimension representation, each bank having at least a number of memory locations equal to the largest valid value for its associated ordinate, each ordinate representing a memory location within the associated memory bank;

a format module for masking out one or more bits from an incoming key, the number of bits to be masked determined by the first prefix key length assigned to the prefix search key apparatus; and

a conversion module for converting the masked key into an n-dimension representation having a plurality of ordinates, the conversion module storing the masked key into one memory location as referenced by one of the plurality of ordinates.

2. (original) The apparatus of claim 1 wherein the incoming key comprises data extracted from an Internet protocol (IP) packet header.

3. (original) The apparatus of claim 1 wherein the means for assigning the prefix key length assigns a second prefix key length whereby the conversion module stores prefix keys having either the first or second prefix key length.

4. (original) The apparatus of claim 1 further comprising:

a demultiplexer for selecting one of two prefix keys stored in the same memory location.

5. (original) The apparatus of claim 1 further comprising:

a key matching logic connected to the plurality of memory banks, the key matching logic comparing in a single step a masked key with prefix keys stored at each memory location defined by the n-dimension representation of the incoming key to determine the existence of the masked key.

6. (original) The apparatus of claim 1 wherein each memory location stores additional information associated with the prefix key, wherein additional information is a class indication, a virtual route indication, a virtual private network indication, or an adjacent table pointer and control indication.

7. (original) The apparatus of claim 1 wherein the masked key includes a field wherein the field is a class number, a virtual route number, a virtual private network number, or a type of service number.

8. (original) The apparatus of claim 1 wherein a field is stored with the masked key wherein the field is a pointer to another table entry or a sequence of control bits.

9-24. (canceled)